SIPE				212
	A	pplication No.	Applicant(s)	
SEP 2 0 2004 E		9/771,799	FRANCIS, ROBERT	HENRY
Office Action S	E:	xaminer	Art Unit	1
A. D. ALES		rystal J. Barnes	2121	· It
The MAILING DATE o	f this communication appear	s on the cover sheet	with the correspondence addre	ess
A SHORTENED STATUTOR THE MAILING DATE OF TH - Extensions of time may be available after SIX (6) MONTHS from the mailing of the period for reply specified above	HIS COMMUNICATION.  under the provisions of 37 CFR 1.136(a)  ng date of this communication.  is less than thirty (30) days, a reply with  we, the maximum statutory period will ap- ided period for reply will, by statute, cau- than three months after the mailing date	in the statutory minimum of the oppy and will expire SIX (6) MC set the application to become	a reply be timely filed  nirty (30) days will be considered timely.  DNTHS from the mailing date of this comma  ABANDONED PROPERS  If timely filed, has been some timely.	nunication.
	unication(s) filed on 20 Jan-		SEP 2 2 2004	
_	unication(s) filed on 29 Janu	<del></del>	Technology Center 210	00
2a) This action is FINAL.	,	ction is non-final.	•	
3) Since this application closed in accordance Disposition of Claims	with the practice under Ex	e except for formal moarte Quayle, 1935 C	atters, prosecution as to the r c.D. 11, 453 O.G. 213.	nerits is
4)⊠ Claim(s) <u>1 and 2</u> is/an	e pending in the application.		•	
4a) Of the above claim	(s) is/are withdrawn f	rom consideration.		•
5) Claim(s) is/are	allowed.	•		
6)⊠ Claim(s) <u>1 and 2</u> is/are	rejected.			
7) Claim(s) <u>1 and 2</u> is/are	objected to.			
8) Claim(s) are sul Application Papers	bject to restriction and/or ele	ection requirement.		
9)⊠ The specification is obje	ected to by the Examiner.			
10) The drawing(s) filed on	29 January 2001 is/are: a)[	☐ accepted or b)⊠ obj	ected to by the Examiner.	
•	est that any objection to the dra		*	
11) The proposed drawing				
1	drawings are required in reply to		•	
12) The oath or declaration	is objected to by the Examin	ner.	•	
Priority under 35 U.S.C. §§ 119	and 120		r	
13) Acknowledgment is ma	ade of a claim for foreign prid	ority under 35 U.S.C.	§ 119(a)-(d) or (f).	
a) All b) Some * c)[				
1. Certified copies	of the priority documents ha	ve been received.		•
2. Certified copies of the priority documents have been received in Application No				
application fr	rtified copies of the priority drom the International Bureau of Office action for a list of the	(PCT Rule 17.2(a)).	n received in this National Sta	ge
14) Acknowledgment is mad				plication)
1	he foreign language provisio	onal application has b	peen received.	pilodiloriy.
1) Notice of References Cited (PTO-8 2) Notice of Draftsperson's Patent Dra 3) Information Disclosure Statement(s U.S. Patent and Trademark Office	awing Review (PTO-948)		Summary (PTO-413) Paper No(s) Informal Patent Application (PTO-15	
D.S. Patent and Trademark Office PTOL-326 (Rev. 04-01)	Office Action 5	Summary ·	Part of Pa	per No. 3

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#### DETAILED ACTION

#### Information Disclosure Statement

1. The information disclosure statement filed 2001 April 12 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the non-patent literature document referred to therein has not been considered.

### Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: reference numbers 42, 46, 50, 56, 60 and 62 in figure 2 are not mentioned in the specification. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

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3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "52" has been used to designate both "Set each element of Z stack to 0" and "Adjust  $K_{bias}$ " in figure 2. Also see page 11  $2^{nd}$  and  $3^{rd}$  full paragraphs. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### Specification

4. The disclosure is objected to because of the following informalities: reference number 58 on page 11 end of 3<sup>rd</sup> full paragraph should be reference number 60. Appropriate correction is required.

## Claim Objections

5. Claims 1 and 2 are objected to because of the following informalities: claim numbers "A1" and "A2" should be "1" and "2" and the whereby clauses of both claims 1 and 2 should be changed to additional steps of the process. Appropriate correction is required.

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### Claim Rejections - 35 USC § 112

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6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- 7. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
- 8. Claim 1 recites the limitation "said analog controller's output" in step c of the claim. There is insufficient antecedent basis for this limitation in the claim.

# Claim Rejections - 35 USC § 101

9. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1 and 2 are rejected under 35 U.S.C. 101 because applicant has failed to claim a practical utility that defines a "real world" context of use. Utilities that require further research to identify or reasonably confirm a "real world" context of use are not substantial utilities.

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10. Claims 1 and 2 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific, substantial, and credible asserted utility or a well established utility.

Examiner interprets that the claimed invention does not present any practical utility. Claims 1 and 2 recite the steps of a process for rapidly controlling a process variable to a set point without overshoot using a time domain polynomial feedback controller that is not applied to any practical utility.

## Claim Rejections - 35 USC § 103

- 11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
  - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
- 12. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 4,948,950 to Rae in view of USPN 5,379,210 to Gruji et al.

As per claim 1 wherein a process for rapidly controlling a process variable to a set point without overshoot using a time domain polynomial feedback controller

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comprising the steps of: a. a means for calculating an error signal by comparing a process variable to a set point; b. a means for setting said controller's output to zero if said error signal is negative; c. a means for calculating said analog controller's output using a user tuned time domain polynomial equation in a feedback configuration; d. a means for automatically converting to an integral correction for said set point maintenance based on user defined criteria; and e. a user selectable means for improving a bias tuning parameter automatically based on user defined criteria; whereby said controller moves said process variable to said set point more rapidly in applications where overshoot is not allowed requiring less energy or materials necessary to achieve said set point;

the Rae reference discloses

(see figure 1 and column 3 lines 30-37, "The control means 22 ... a temperature sensing means 26 for sensing the actual temperature of the cooking oil ...")

(see column 3 lines 42-49, "The control means 22 ... a set point means 30 and is adapted to permit an operator to select the desired set point temperature for the deep fat fryer 20 ...")

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(see column 3 lines 53-63, "The control means 22 ... a microprocessor 31 ...

programmed with the new formula ... can turn on and off the heating means 23

through the relay means 32 ...")

(see columns 3-4 lines 64-2, "... shutting down the operation of the heat producing means 23 should the actual temperature of the cooking oil 25 exceed a certain high temperature limit ...")

(see column 4 lines 11-15, "... a desired rate of change curve ... asymptotic to the selected set point temperature ... prevent adverse overshooting of the selected set point temperature.")

(see column 5 lines 1-22, "... the actual slope is compared with the target slope and is the actual slope id less than the target slope, the heat source 23 is energized (or merely remains energized) and, if the reverse is true, the heat source 23 is turned off ...")

The Rae reference does not expressly disclose c. a means for calculating said analog controller's output using a user tuned time domain polynomial equation in a feedback configuration.

The Gruji et al. reference discloses

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(see column 15 lines 66-68, "An input-output form for representing differential equations ...")

(see column 16 lines 16-33, "A generalized linear differential equation ...")

(see column 17 lines 6-49, "The transfer matrix function for the inputoutput description of systems ...")

(see column 21 lines 32-34, "The polynomial function is the accurate characteristic polynomial of the closed-loop feedback control system.")

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to further define the control means taught by the Rae reference with the natural tracking controller taught by the Gruji et al. reference.

One of ordinary skill in the art would have been motivated to modify the control means with the natural tracking controller so that the behavior or output of a control system was optimized with relatively minimal knowledge of the structure of function of the system being controlled.

#### Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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The following patents are cited to further show the state of the art with

respect to optimization/adaptive control in general:

USPN 5,390,277 to Van Wagner et al.

USPN 4,430,606 to Otsuki et al.

Any inquiry concerning this communication or earlier communications from

the examiner should be directed to Crystal J. Barnes whose telephone number is

703.306.5448. The examiner can normally be reached on Monday-Friday alternate

Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the

examiner's supervisor, Anil Khatri can be reached on 703.305.0282. The fax

phone number for the organization where this application or proceeding is assigned

is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application

or proceeding should be directed to the receptionist whose telephone number is

703.305.3900.

cjb

September 24, 2003

ANIL KHATRI SUPERVIŞORY PATENT EXAMINED